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UROPYGIDA (ARACHNIDA) OF THE PHILIPPINE ISLANDS, WITH DESCRIPTION OF A NEW GENUS AND SPECIES

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The uropygid fauna of the Philippine Islands has proved to be very diverse, even though few collections of these animals have been available for study. The R. V. Chamberlin arachnid collection, recently acquired by the American Museum of Natural History, contains several interesting species of this order, one of which is a peculiar, undescribed species from Panay. This unique species differs so strikingly from others of the order that it seems appropriate to assign it to a new genus, for which I propose the name:

***Glyptogluteus*, new genus**

Description.—The following is based on the male only, the female being unknown.

Cephalothorax. Carapace with well-developed keels running about three-fourths distance from lateral eyes to median eyes of each side; median eyes on well-developed mound and separated by ridge; lateral eye groups composed of three large eyes encircling two small eyes.

Abdomen. Terga I to IX divided by median suture. Sternum II with median furrow; sternum III with median spine directed posteriorly; sternum IV emarginate anteriorly; sterna V to VII similar; sterna VIII and IX complexly modified. Segment XII without ommatoids.

Pedipalps. Coxa without secondary teeth on apophysis; patellar apophysis long; hand (tibia) globose, much wider and thicker than other segments; fixed finger very short and thick; tarsus-basitarsus short, thick, basally wide, and with a strong subapical tooth.

Comparisons.—*Glyptogluteus* differs from all other genera of the Uropygida in the complex modification of abdominal segments VIII and IX.

Etymology.—The generic epithet from Greek *glypto*, meaning carved or engraved, and *gluteus*, meaning rump, describing the complexly modified nature of abdominal sterna VIII and IX.

Type species.—The type and only known species of this genus is described as follows:

***Glyptogluteus augustus*, new species**

Holotype.—An adult male, taken on Panay Island, Philippine Islands, in August 1902 by T. C. Chase, and deposited in the American Museum of Natural History, New York City.

Paratypes.—Two juveniles, taken on Panay Island, during August 1902 by the same collector as was the holotype, and deposited in the American Museum of Natural History.

Description.—Cephalothorax. Carapace finely granular, half again as long as wide, nearly flat anterodorsally, sides lateral to keel nearly vertical, slightly emarginate posteriorly, anterior lip with about 18 horizontal setae projecting forward; keel between median and lateral eyes well developed; median eyes divided by less than one diameter; anterior sternum (tritotetrasternum) slightly expanded subdistally, narrowing again posteriorly; pentasternum triangular; metasternum with several lateral, longitudinal divisions.

Abdomen. Terga and sterna finely granular; terga I to IX divided by median suture, wider on I and III than on II and IV to IX, medial margin of sternum II greatly produced distally, but evenly arched from lateral edges, bearing mediolongitudinal, narrow depression along entire length; margin of sternum III gently curved, bearing well-developed, but apically blunt median spine; sternum IV emarginate anteriorly, narrow; sterna V to VII similar; sternum VIII with deep, longitudinal pit on each side of raised midline, posterior margin slightly emarginate; sternum IX intricately modified, with darkened, vertical, median extension of median one-third projecting under raised posterior margin of sternum VIII, pair of lateral ridges run diagonally toward posterolateral margins, but dissipate about half way to it; segment XI slightly narrower than X, segment XII without ommatoids; flagellum with 24 segments.

Pedipalps. Coxa densely punctured, apophysis with apical tooth; trochanter densely punctured, with two ventral and five dorsal teeth; femur densely punctured, with large ventral and small dorsal tooth;

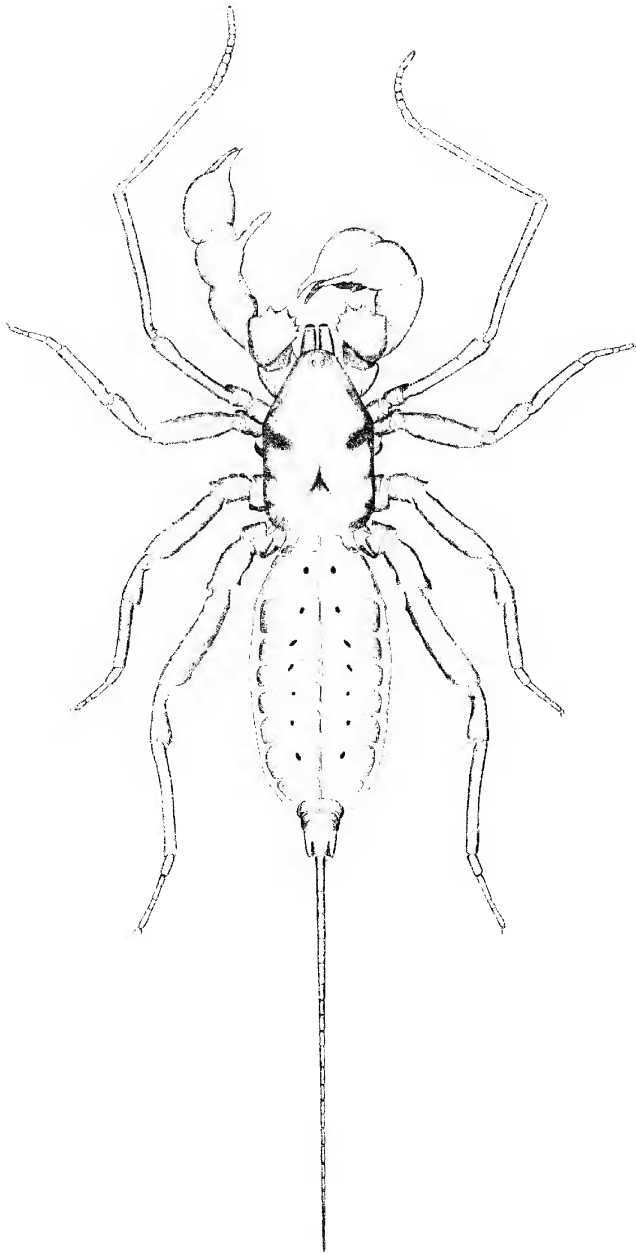


FIG. 1.—Dorsal view of male *G. augustus*.

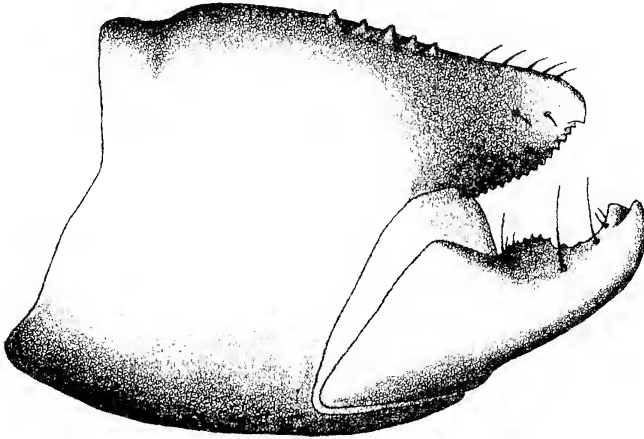
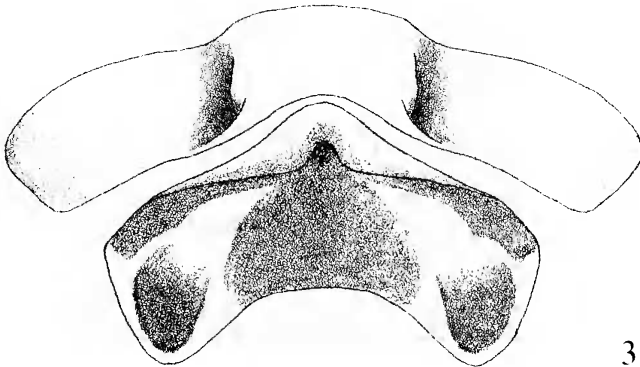
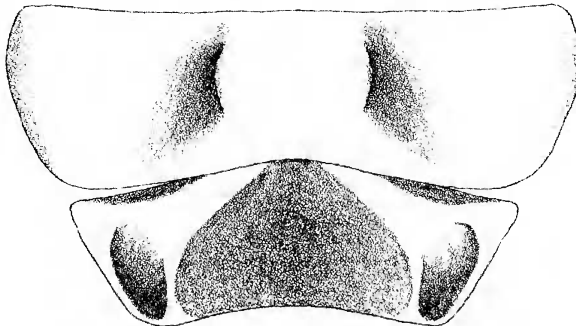


FIG. 2.—Mesal view of pedipalpal hand and finger of male *G. augustus*.



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FIGS. 3-4.—Abdominal sterna VIII and IX of male *G. augustus*: 3, ventrovertical view; 4, ventrodiscal view.

TABLE 1.—*Selected measurements of the male holotype of Glyptogluteus augustus.*

Variate	Legs			
	I	II	III	IV
Coxa	1.3	2.1	1.9	2.2
Trochanter	0.8	1.2	1.2	1.7
Femur	3.7	2.7	2.9	4.2
Patella	5.4	1.7	1.8	1.7
Tibia	4.8	2.3	2.2	4.1
Basitarsus		0.6	0.7	0.7
Tarsus	3.1	1.6	1.5	1.9

patella, hand, and finger sparsely punctured, patellar apophysis toothed on each side.

Legs. Tarsal-basitarsal segments of leg I unmodified, segments 2 and 3 similar, parallel sided, segments 4 to 6 gradually declining in length, segment 2 more than half again as long as segment 8, 8 half as long as segment 9; segments of the following proportions: $9 > 2$, $3 > 8 > 4 > 5 > 6 > 7 > 1$; length of leg segments given in Table 1.

Comparisons.—*Glyptogluteus augustus* differs from all other species of the order in having abdominal sterna VIII and IX complexly modified. It is most closely related to some species in the heterogeneous genera *Abaliella* and *Thelyphonus*. It perhaps appears closest to *Abaliella* in lacking ommatoids, having a well-developed keel, unmodified patellar apophysis of the male's pedipalp, and modified abdominal sterna II and III. *Glyptogluteus* also differs from other genera in having stout, orbital hand; short and stout fixed and moveable finger of the pedipalp, at least in the males.

Measurements.—Total length (from anterior tip of carapace to end of abdominal segment XII) of the holotype is 18.0; carapacal length, 6.7. See also Table 1. All measurements are in millimeters.

Distribution.—*G. augustus* is known only from Panay Island, Philippine Islands.

Remarks.—This new species shows a modification that is unique in at least this arachnid order. It is unfortunate that living animals are not available to determine what behavioral attributes relate to the modification of abdominal sterna VIII and IX. Inasmuch as the paratypes are juveniles, and do not display the above modification, it is suspected that it may play some part in their reproductive habits.

Females of *G. augustus*, when discovered, will probably show a great similarity to some species of *Abaliella* and *Thelyphonus*, specif-

ically to those other than *A. rohdei* (Kraepelin, 1897), in having the tarsal segments of the first leg modified.

Glyptogluteus represents no geographic extension for the *Thelyphonus-Abaliella* line, but may represent its peak of specialization.

Etymology.—*Augustus* is the Latin word from which the month of collection takes its name.

ACCOUNTS OF SPECIES

Genus **Abaliella** Strand

1897. *Abalius* Kraepelin, Abhandl. Geb. Naturw. Verein Hamburg, 15:16.

1928. *Abaliella* Strand, Arch. Naturg., 42(8):32-75.

Distribution.—New Britain, New Guinea, Philippine Islands, and Samoa.

Remarks.—Members of this genus are characterized by the modified tarsal segments of the female's first leg (except in *A. rohdei*), unmodified patellar apophysis of the male's pedipalp, modified abdominal sterna II and III, no ommatoids, and a well-developed keel.

Abaliella manilana (Kraepelin)

1900. *Abalius manilanus* Kraepelin, Abhandl. Geb. Naturw. Verein Hamburg, 16:7.

1916. *Abalius manilanus*, Gravely, Rec. Ind. Mus., 12:78.

1935. *Abaliellus manilanus*, Werner, Scorp., Pedip., In Bronns Klassen und Ordnungen des Tierreichs, Bd. 5, Abt. 4, Buch 8:467.

1973. *Abaliella manilana*, Rowland, Occas. Papers Mus., Texas Tech Univ., 10:5.

Distribution.—Manila, Luzon Island.

Remarks.—This species is distinguished from other members of the genus by a modified tarsal segment 6 on the first leg of females. The males are unknown.

Genus **Mimoscorpius** Pocock

1802. *Thelyphonus* Latreille, Hist. Nat. Crust. et Ins., 3 (in part).

1894. *Mimoscorpius* Pocock, Ann. Mag. Nat. Hist., ser. 6, 14:132.

Distribution.—Philippine Islands.

Remarks.—This genus is characterized by the unmodified patellar apophysis and extremely flat hand of the male's pedipalp, unmodified abdominal sterna II and III, two ommatoids, and a well-developed keel.

Mimoscorpius pugnator (Butler)

1872. *Thelyphonus pugnator* Butler, Ann. Mag. Nat. Hist., ser. 4, 10:204.

1894. *Mimoscorpius pugnator*, Pocock, Ann. Mag. Nat. Hist., ser. 6, 14:132.

Distribution.—Philippine Islands.

Remarks.—The female of this species is unknown, and the male is known by a single specimen.

Genus *Minbosius* Speijer

1802. *Thelyphonus* Latreille, Hist. Nat. Crust. et Ins., 3 (in part).
1933. *Minbosius* Speijer, Ned. Ent. Ver. Tijdschr. Ent., 76:5.
1936. *Minbosius*, Speijer, Mitt. Zool. Mus., 21(2):258.

Distribution.—Philippine Islands, Moluccas, and New Guinea.

Remarks.—This genus is characterized by the unmodified tarsal segments of the female's first leg, unmodified patellar apophysis of the male's pedipalp, modified abdominal sterna II and III, two ommatoids, and a well-developed keel.

Minbosius manilanus (Koch)

1843. *Thelyphonus manilanus* Koch, Arach., 10:28.
1873. *Thelyphonus philippensis* Butler, Cist. Ent., 6:129-132.
1888. *Thelyphonus papuanus* Thorell, Ann. Mus. Genova, 26:385.
1889. *Thelyphonus strauchii* Tarnani, Zool. Anz., 12:1.

Distribution.—Halmaheira, Moluccas; New Guinea; and Manila, Luzon Island, Philippine Islands.

Remarks.—Kraepelin (1897) erected the variety *halmaheirae* for the Moluccan population, but Giltay (1931) listed this and the New Guinean population as introduced.

Genus *Thelyphonus* Latreille

1758. *Phalangium* Linne, Syst. Nat., 10th ed., 619 (in part).
1802. *Thelyphonus* Latreille, Hist. Nat. Crust. et Ins., 3.
1894. *Thelyphonus*, Pocock, Ann. Mag. Nat. Hist., ser. 6, 14:120-134.
1897. *Thelyphonus*, Kraepelin, Abhandl. Geb. Naturw. Verein Hamburg, 15:19.
1899. *Thelyphonus*, Kraepelin, Scorp. und Pedip., in Das Tierreich, 8:212.

Distribution.—Ambon; Borneo; Burma; Celebes; Ceylon; India; Java; Malaysia; New Herbrides; Philippine Islands; Solomon Islands; Sumatra; Thailand; Belitung; Lingga.

Remarks.—Members of this genus are characterized by the modified segments of the tarsus of the female's first leg, unmodified patellar apophysis of the male's pedipalp, modified abdominal sterna II and III, two ommatoids, and a well-developed keel.

***Thelyphonus hansenii* Kraepelin**

1897. *Thelyphonus hansenii* Kraepelin, Abhandl. Geb. Naturw. Verein Hamburg, 15:30.

Distribution.—Mindanao Island.

***Thelyphonus semperi* Kraepelin**

1897. *Thelyphonus semperi* Kraepelin, Abhandl. Geb. Naturw. Verein Hamburg, 15:29.

Distribution.—Western Mindanao Island.

***Thelyphonus vanoorti* Speijer**

1936. *Thelyphonus vanoorti* Speijer, Mitt. Zool. Mus., 21(2):255.

Distribution.—Manila, Luzon Island.

Remarks.—The males of two Philippine species of *Thelyphonus* can be distinguished readily by the morphology of the tarsal segments of the first leg. In *T. hansenii*, segment 5 is similar in size to segment 4, but is wider than segment 6. In *T. semperi*, segment 5 is similar to segment 6, but is narrower than segment 4. Males of *T. vanoorti* are not distinguishable from those of *T. semperi* on the basis of published information. Speijer (1936) did not compare *T. vanoorti* to Philippine species, but mentioned that it has affinities with *T. linganus* Koch, 1843, from Sumatra. Females of *T. hansenii* are not known.

Genus *Glyptogluteus* Rowland

Distribution.—Panay Island.

Remarks.—This genus is characterized by the unmodified patellar apophysis and the orbital hand of the male's pedipalp, modified abdominal sterna II, III, VIII, and IX in the male, no ommatoids, and a well-developed keel.

***Glyptogluteus augustus* Rowland**

Distribution.—Panay Island.

Remarks.—The female of this species is unknown, and the male is known by a single adult and two juveniles.

DISCUSSION

The occurrence of five of the 16 genera of Uropygida in the relatively small area of the Philippine Islands is noteworthy, especially inasmuch as three of these are monotypic endemics.

The genus *Abaliella* is represented in the Philippines by *A. manilana*, but is otherwise restricted to the Papuan Subregion. I question,

however, that this genus is actually monophyletic. It is quite possible that loss of ommatoids occurred more than once in ancestral *Thelyphonus* stock, which is all that presently distinguishes *Abaliella* from the latter. If, however, this genus is monophyletic, its distribution obviously crosses Wallace's Line, the proposed boundary between Australian and Oriental Regions. *A. manilana* occurs on Luzon Island, the most remote island from the apparent center of distribution of the genus, New Guinea. In view of distributional patterns of better known groups, and the superficial differences between *Abaliella* and *Thelyphonus*, I believe that *A. manilana* was probably derived from *Thelyphonus* independently from the Papuan species of *Abaliella*. An alternative to this solution is that a common *Abaliella* ancestor in Borneo could have given rise to the extant species, but itself is now extinct. The presence of *A. manilana* on Luzon Island and in no intervening islands, however, makes this theory of dispersal less likely than the former explanation.

The genus *Thelyphonus* is widespread in the Malay Archipelago, and is quite diversified in Borneo. The species of *Thelyphonus* in the Philippines show the expected similarity to those of Borneo. It is probable that ancestral forms crossed the Palawan corridor into the Philippines. It is further suspected that at least some of the Philippine species may have arrived during the Pleistocene when a Palawan land bridge may have occurred, and when the Philippine Islands were not as fragmented.

Minbosius is a problematic genus. It is represented by a single species that apparently was introduced from the Philippines into New Guinea and the Moluccas (Giltay, 1931). *M. manilanus* is closely related to *Thelyphonus*, but rather than being a specialization of the latter, as are the other endemic genera, it appears to be more primitive. It lacks any specialization of tarsal segments of the female's first leg, which is considered to be of fundamental significance. In other facies, it agrees quite well with *Thelyphonus*. One may be tempted to consider this genus ancestral to *Thelyphonus*. Darlington (1957) gave numerous examples of primitive forms being forced out into zones peripheral to the center of distribution, which may very well be exemplified here. My knowledge of Malaysian species of *Thelyphonus* is too limited, however, to allow a definitive statement.

Mimoscorpius and *Glyptogludeus* are monotypic endemics. *Mimoscorpius* is similar to *Uroproctus* Pocock, 1894, and *Mastigoproctus* Pocock, 1894, in many respects, but it possesses a striking modification of the male's pedipalpal hand. *Glyptogludeus* appears to be a specialization of basic *Thelyphonus* stock, but differs from *Thelypho-*